

Claims

1. A method for forming a compact from a powder, by filling a forming portion
5 formed in a mold body with a raw powder and then fitting upper and lower punches into
the forming portion, comprising the steps of:

applying a solution obtained by dissolving a lubricant in a solvent to the
forming portion prior to filling the forming portion with a raw powder; and

10 evaporating the solution thus applied to thereby form a crystallized layer on the
surface of the forming portion.

2. The method for forming a compact from a powder according to claim 1,
wherein the lubricant comprises an oxo-acid-based metal salt

15 3. The method for forming a compact from a powder according to claim 1,
wherein the lubricant is at least one selected from a group consisting of phosphate metal
salt, sulfate metal salt, borate metal salt, silicate metal salt, tungstate metal salt,
organic-acid-based metal salt, nitrate metal salt and carbonate metal salt.

20 4. The method for forming a compact from a powder according to claim 3,
wherein the lubricant is at least one selected from a group consisting of dipotassium
hydrogen phosphate, disodium hydrogen phosphate, tripotassium phosphate, trisodium
phosphate, potassium polyphosphate, sodium polyphosphate, riboflavin potassium
phosphate and riboflavin sodium phosphate.

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5. The method for forming a compact from a powder according to claim 3,
wherein the lubricant is at least one selected from a group consisting of potassium
sulfate, sodium sulfate, potassium sulfite, sodium sulfite, potassium thiosulfate, sodium
thiosulfate, potassium dodecyl sulfate, sodium dodecyl sulfate, potassium
30 dodecylbenzensulfonate, sodium dodecylbenzenesulfonate, Food Blue No.1., Food

Yellow No.5., potassium ascorbyl sulfate and sodium ascorbyl sulfate.

6. The method for forming a compact from a powder according to claim 3, wherein the lubricant is potassium tetraborate or sodium tetraborate.

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7. The method for forming a compact from a powder according to claim 3, wherein the lubricant is potassium silicate or sodium silicate.

8. The method for forming a compact from a powder according to claim 3, wherein the lubricant is potassium tungstate or sodium tungstate.

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9. The method for forming a compact from a powder according to claim 3, wherein the lubricant is at least one selected from a group consisting of potassium acetate, sodium acetate, potassium benzoate, sodium benzoate, potassium ascorbate, sodium ascorbate, potassium stearate and sodium stearate.

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10. The method for forming a compact from a powder according to claim 3, wherein the lubricant is potassium nitrate or sodium nitrate.

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11. The method for forming a compact from a powder according to claim 3, wherein the lubricant is at least one of potassium carbonate, sodium carbonate, potassium hydrogen carbonate and sodium hydrogen carbonate.

12. The method for forming a compact from a powder according to claim 1, wherein the lubricant comprises one or more lubricants selected from the lubricants set forth in claims 2 to 11.

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13. The method for forming a compact from a powder according to claims 2 to 12, wherein said solution is the one in which said lubricant is completely dissolved in water so as to have a concentration greater than or equal to a concentration defined by

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one molecule of the lubricant forming the thickness of the crystallized layer, but less than a concentration of a saturated solution.

14. The method for forming a compact from a powder according to claim 13,
5 wherein the lubricant is potassium salt or sodium salt.

15. The method for forming a compact from a powder set forth in one of claims 2 to 14, wherein an antiseptic substance is added into the lubricant.

10 16. The method for forming a compact from a powder set forth in one of claims 2 to 15, wherein a defoaming agent is added into the lubricant.

17. The method for forming a compact from a powder set forth in one of claims 2 to 16, wherein soluble solvent is added into the lubricant.

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18. The method for forming a compact from a powder according to claim 17, wherein said solvent is alcohol or ketone.

19. The method for forming a compact from a powder according to claims 2-18,
20 wherein no halogen element is included in the lubricant.

20. A mold apparatus for powder molding, comprising:

a mold body with a through-hole for forming a side of a compact;

a lower punch to be fitted into the through-hole from beneath;

25 an upper punch to be fitted into the through-hole from above;

a spray pump from which a lubricant solution is sprayed to the through-hole;

a heater provided around a forming portion of the mold body, the forming portion being defined by the through-hole and the lower punch; and

30 a temperature control system keeping a temperature of the heater higher than an evaporating temperature of the solution.

21. A mold apparatus for powder molding, comprising:

a mold body with a through-hole for forming a side of a compact;

a lower punch to be fitted into the through-hole from beneath;

5 an upper punch to be fitted into the through-hole from above;

a spray pump from which a lubricant solution is sprayed to the through-hole;

a heater provided around a forming portion of the mold body, the forming
portion being defined by the through-hole and the lower punch; and

10 a temperature control system keeping a temperature of the heater higher than an
evaporating temperature of the solution, but lower than a melting temperature of the
lubricant

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